

## CLAIMS

1. A method for processing a metal-bearing sludge in conjunction with a metal separation process, characterised in that the sludge produced in the metal separation process is classified based on a predetermined property of the sludge into a better and worse substance fraction, as the process is concerned, and the worse fraction is removed from the process, and the better fraction is returned to the process.

2. The method as defined in claim 1, characterised in that the metal-bearing sludge is a product of a precipitation process.

3. The method as defined in claim 1 or 2, characterised in that the metal-bearing sludge is settled in a metal separation reactor prior to the classification.

4. The method as defined in any one of claims 1-3, characterised in that the classification is based on the surface activity of sludge particles.

5. The method as defined in any one of claims 1-4, characterised in that the classification is performed based on the granular size of the sludge particles by dividing the sludge into a coarser and finer fraction.

6. The method as defined in any one of claims 1-5, characterised in that the classification is performed using a device based on the centrifugal force.

7. The method as defined in claim 6, characterised in that the classification is performed using a hydrocyclone or a similar device.

8. The method as defined in any one of claims 1-7, characterised in that the underflow of the classification device is a worse fraction from the standpoint of the process.

9. The method as defined in any one of claims 1-8, characterised in that the overflow of the classification device is a better fraction from 5 the standpoint of the invention.

10. The method as defined in any one of claims 1-9, characterised in that the fraction that is worse from the standpoint of the process contains mainly coarse fraction.

11. The method as defined in any one of claims 1-10, characterised in that the fraction that is better from the standpoint of the invention contains mainly fine fraction.

12. The method as defined in any one of claims 1-11, characterised in that the classification is performed in batches or continuously.

13. An apparatus for processing a metal-bearing sludge in conjunction with a metal separation process including one or more metal separation reactors (11, 12), a feeding device (18) for introducing raw material into the metal separation reactor (11, 12) and a junction line (19) for removing the sludge produced in the metal separation from the reactor (11, 12), characterised in that the apparatus includes a classification device (14) which is arranged in conjunction with the pipe extending from the metal separation reactor (11, 12) and which is arranged for classifying the sludge (13) based on a predetermined property into a better (15) and a worse (17) substance fraction, as the process is concerned, and recycling means (15) for returning the better substance fraction to the metal separation reactor (11, 12), and means for removing the worse substance fraction (17) from the reactor.

14. The apparatus as defined in claim 13, characterised in that the classification

device (14) is placed substantially in conjunction with the metal separation reactor (11, 12) for removing the sludge settled on the bottom from the bottom of the reactor (11, 12).

5       15. The apparatus as defined in claim 13 or 14, characterised in that the classification device (14) is based on the centrifugal force.

10      16. The apparatus as defined in claim 15, characterised in that the classification device (14) is a hydrocyclone or a similar device.

15      17. The apparatus as defined in any one of claims 13-16, characterised in that the classification device (14) is arranged to function in such a manner that the underflow (17) of the device is the worse fraction from the standpoint of the process.

20      18. The apparatus as defined in any one of claims 13-17, characterised in that the classification device (14) is arranged to function in such a manner that the overflow (15) of the device is the better fraction from the standpoint of the process.

25      19. The apparatus as defined in any one of claims 13-18, characterised in that the classification device (14) is arranged to function in batches or continuously.

20. The use of an apparatus as defined in any one of claims 13-19 in a zinc preparation process.

21. The use of an apparatus as defined in claim 20 in a cobalt removing process.